

CLAIMS:

1. A tilt control device for controlling inclination of a recording surface of an optical disc (1), said tilt control device comprising:

- a) tilt detecting means (3) for detecting said inclination of said recording surface;
- b) focus control means (7) for generating a focus controlling output; and
- 5 c) focus actuating means (11) for controlling a focusing state of an optical recording/reproducing beam based on said focus controlling output, characterized by
- d) calibrating means (10) for calibrating an output offset of said tilt detecting means by using said focus controlling output.

10 2. A device according to claim 1, characterized in that

said calibrating means (10) is arranged to measure a mean focus controlling output and to use said mean focus controlling output for calibration.

15 3. A device according to claim 1 or 2, characterized in that

said focus controlling output is a focus voltage or a controller integrator output.

20 4. A device according to any one of claims 1 to 4, characterized by

a sledge (4) for moving an optical pickup unit, a tilt platform (5) for changing said inclination of said recording surface, a tilt adjusting means (9) for adjusting said tilt platform (5), and a tilt control means (10) for controlling said sledge (4) and said tilt adjusting means (9).

25 5. A device according to claim 5, characterized in that

said tilt control means (10) is arranged to position said sledge (4) at a radius corresponding to the rotation point between a tilt frame defined by said tilt platform (5) and said optical disc

(1), to move said sledge (4) outward over a first predetermined distance, to control said tilt adjusting means (9) to adjust said tilt platform (5) until the same output value of said focus control means (7) as obtained at said radius corresponding to said rotation point is obtained, and to move said sledge (4) inward over a second predetermined distance, wherein said
5 calibrating means (10) is arranged to use the output value of said tilt detecting means (3) obtained at said second predetermined distance as said output offset used for said optical disc (1).

6. A device according to claim 6,

10 characterized in that

said second predetermined distance corresponds to the half of said first predetermined distance.

7. An optical disc player comprising a tilt control device as claimed in any one of
15 claims 1 to 7.

8. A tilt control method for controlling inclination of a recording surface of an optical disc (1), said tilt control method comprising the steps of:

a) generating a focus controlling output, and

20 b) controlling a focusing state of an optical recording/reproducing beam based on said focus controlling output, characterized by

c) calibrating an output offset of a tilt detecting means (3) by using said focus controlling output.

25 9. A method according to claim 10,

characterized in that

said calibrating step comprises measuring a mean focus controlling output and using said mean focus controlling output for calibration.

30 10. A method according to claim 10 or 11,

characterized in that

said calibrating step comprises measuring said focus controlling output at a rotation point between a tilt frame defined by a tilt platform (5) and said optical disc (1), adjusting said tilt

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platform (5) until the same focus controlling output is obtained at a first predetermined distance outward from said rotation point, and using a focus controlling output obtained at a second predetermined distance inward from said first predetermined distance as said output offset of said tilt detecting means (3) for said optical disc (1).

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11. A method according to any one of claims 10 to 12, characterized in that said second predetermined distance corresponds to the half of said first predetermined distance.

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12. A tilt control device for controlling inclination of a recording surface of an optical disc (1), said tilt control device comprising:

- a) focus control means (7) for generating a focus controlling output; and
- b) focus actuating means (11) for controlling a focusing state of an optical

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recording/reproducing beam based on said focus controlling output, characterized by

- c) tilt control means (10) for adjusting a tilt frame based on measurements of the controlling output of said focus control means (7) at at least two different radial positions at two tilt frame positions.

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13. A device according to claim 14, characterized in that said focus controlling output is a focus voltage or a controller integrator output.

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14. A device according to any one of claims 14 to 16, characterized by a sledge (4) for moving an optical pickup unit, a tilt platform (5) for changing said inclination of said recording surface, a tilt adjusting means (9) for adjusting said tilt platform (5), wherein said tilt control means (10) is arranged to control said sledge (4) and said tilt adjusting means (9) so as to perform said measurements.

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15. A device according to claim 17, characterized in that

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said adjusting step comprises measuring said focus controlling output at said at least two different radial positions at said two different radial tilt positions, and adjusting said tilt platform (5) based on the mean radial tilt obtained for said two predetermined tilt frame positions in between said at least two different radial positions.